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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Patricius Aloysius Jacobus Tinnemans

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EXAMINER

ZHU, JOHN X

ART UNIT

PAPER NUMBER

2858

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

03/27/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/756,749

Applicant(s)

TINNEMANS, PATRICIUS
ALOYSIUS JACOBUS

Examiner

John Zhu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 6/2/04, 1/11/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Reference character "BP" in Fig. 1 is not described in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the third, grounded conductor of claim 5 and amplifier circuit of claim 6 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended

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replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: In paragraph 0005 of the specification, a second amplitude and a second phase were introduced in relation to the first amplitude and the first phase. However, a first amplitude and phase were not discussed previously.

Appropriate correction is required.

Claim Objections

4. Claim 12 is objected to because of the following informalities: lack of antecedent basis for "the movement". Appropriate correction is required.

Claim Rejections - 35 USC § 101

5. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 14 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 14 is drawn to a computer program per se. A computer program per se is abstract instructions. Therefore, a computer program is not a physical thing (product) nor a process as they are not "acts" being performed. AS such, these claims are not directed to one of the statutory categories of invention (SEE MPEP 2106.01), but are directed to nonstatutory functional descriptive material.

It is noted that computer programs embodied on a computer readable medium or other structure, which would permit the functionality of the program to be realized, would be directed to a product and be within a statutory category of invention, so long as the computer readable medium is not disclosed as nonstatutory subject matter per se (signals or carrier waves).

Furthermore, although the applicant may have intended to claim an apparatus, the specification, more specifically paragraph 0019, lines 1-2, supports that the "computer program product" is indeed a computer program and not an apparatus.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 16 is rejected under 35 U.S.C. 102(b) as being anticipated by Burkhart et al. (6,075,375).

With respect to claim 16, Burkhart discloses a detection assembly comprising an object (Fig. 2, element 202), a support (Fig. 1, pedestal 102) and means for capacitively sensing the object on the support structure (Abstract, lines 5-11):

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1,4,6,10,14,15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jagiella et al. (5,489,888) in view of Jostlein (5,315,259).

With respect to claims 1 and 6, Jagiella discloses a capacitive detection assembly comprising at least one electrode (Fig. 1, element 2) adjacent a support structure holding object 3, a cable having a first conductor (element 7) connected to the electrode and an AC source (element 100) and a second conductor (element 8), and a

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controller (element 6) for supplying a measuring signal to capacitively detecting an object.

Jagiella does not disclose a second AC source connected to second conductor wherein the controller controls the second AC to provide an AC voltage having a second amplitude and phase substantially equal to the AC voltage supplied by the first AC source, or in another embodiment, the second AC source obtained from the first AC voltage with the use of an amplifier circuit with an amplification of one.

Jostlein discloses that it is well known in the art of capacitive sensing to apply a second AC voltage to an outer conductor similar in magnitude and phase as a first AC voltage being supplied to an inner conductor (Column 3, lines 45-57). Although Jostlein does not explicitly disclose the second voltage being from a separate source or the same source, it would have been obvious to include either design system for the purpose of reduced costs or simpler design as they both produce the same result of providing a second AC voltage equal in magnitude and phase.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jagiella to include the second AC voltage as taught by Jostlein for the purpose of eliminating the effect of stray capacitance on probe measurements (Column 3, lines 55-59).

With respect to claim 4, Jagiella further discloses the second conductor (8) partially enclosing the first conductor (7).

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With respect to claims 10, 14, 15 and 17, Jagiella discloses providing/controlling a DC voltage (103) to electrode 3 to provide a clamping force (although the DC voltage used by Jagiella is an interrogating signal, inherently, it possesses an electrostatic clamp force), and providing/controlling a first AC voltage (element 100) to the electrode 3 via first conductor 7 for capacitively detecting the object.

Jagiella does not disclose providing a second AC voltage to a second conductor having an amplitude and phase substantially the same as the first AC voltage.

Jostlein discloses applying a second AC voltage to an outer conductor similar in magnitude and phase as a first AC voltage being supplied to an inner conductor (Column 3, lines 45-57).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jagiella to include the second AC source and voltage as taught by Jostlein for the purpose of eliminating the effect of stray capacitance on probe measurements (Column 3, lines 55-59).

10. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jagiella and Jostlein as applied to claim 1 above, and further in view of Saeki et al. (5,557,215).

With respect to claims 2 and 3, Jagiella as modified discloses all aspects of the claim except a first conductor is connected to a DC source that is in series with the first AC source to provide a clamping force via DC voltage to an object which is a wafer.

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Saeki discloses a DC source (element 46) applying a DC voltage to clamp a semiconductor wafer to a support (Column 7, lines 13-17).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jagiella to include the DC source on the wafer as taught by Saeki for the purpose of securing a wafer on a platform for self-bias voltage measurements.

11. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jagiella and Jostlein as applied to claim 4 above, and further in view of Wakamatsu et al. (5,321,363).

With respect to claim 5, Jagiella as modified does not disclose a third grounded conductor at least partially enclosing the second conductor.

Wakamatsu discloses a third conductor 33 grounded and surrounding a second conductor 32.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jagiella to include the third conductor as taught by Wakamatsu for the purpose of shielding away interfering signals.

12. Claim 7 rejected under 35 U.S.C. 103(a) as being unpatentable over Jagiella in view of Jostlein and Neukermans et al. (4,654,581).

With respect to claim 7, Jagiella discloses a capacitive detection assembly comprising at least one electrode (Fig. 1, element 2) adjacent a support structure

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holding object 3, a cable having a first conductor (element 7) connected to the electrode and an AC source (element 100) and a second conductor (element 8), and a controller (element 6) for supplying a measuring signal to capacitively detecting an object.

Jagiella does not disclose a second AC source connected to second conductor wherein the controller controls the second AC to provide an AC voltage having a second amplitude and phase substantially equal to the AC voltage supplied by the first AC source, or an illumination system constructed to provide a beam of radiation.

Jostlein discloses that it is well known in the art of capacitive sensing to apply a second AC voltage to an outer conductor similar in magnitude and phase as a first AC voltage being supplied to an inner conductor (Column 3, lines 45-57). Although Jostlein does not explicitly disclose the second voltage being from a separate source or the same source, it would have been obvious to include either design system for the purpose of reduced costs or simpler design as they both produce the same result of providing a second AC voltage equal in magnitude and phase.

Neukermans discloses a capacitive sensing system for a lithographic apparatus comprising an illumination device 7 providing a beam of radiation and ridge/fingers (Fig. 9) to provide alignment.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jagiella to include the second AC voltage as taught by Jostlein for the purpose of eliminating the effect of stray capacitance on probe measurements (Column 3, lines 55-59), and further modify Jagiella to include the

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illumination system of Neukermans for the purpose of properly detecting and aligning a mask and a wafer during photolithography (Abstract, lines 1-4).

13. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jagiella and Jostlein as applied to claim 7 above, and further in view of Burkhart.

With respect to claims 8 and 9, Jagiella as modified does not disclose controlling actuators to move when clamping force is above a predetermined value, and determining a clamping force to provide a max value for acceleration.

Burkhart discloses using a gap capacitance to determine a pre-determined chucking force needed to hold the wafer (Column 2, lines 35-38). Since a chucking force is determined, it is obvious to not induce the wafer to sufficient stressing (whether due to acceleration, gravity, etc.) to cause the force exerted on it to be greater than the predetermined chucking force.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jagiella to include the determination of chucking force for the purpose of finding the limits of stress parameters which could cause harmful effects to the wafer.

14. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jagiella and Jostlein as applied to claim 10 above, and further in view of Barnes et al. (5,670,066).

With respect to claim 11, Jagiella as modified discloses all aspects of the claim except determining a first capacitance with the object present and a second capacitance without the object present and storing at least one capacitance in memory.

Barnes discloses a workpiece positioning system comprising measuring a first and second capacitance before and after an object is placed on the chuck (Claim 2) and storing the measured capacitance in a memory in the controller (Column 5, lines 5-6).

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jagiella to include the first and second capacitance and storing as taught by Barnes for the purpose of determining the presence of a workpiece prior to an electrostatic force being applied.

15. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jagiella and Jostlein as applied to claim 10 above, and further in view of Barnes and Burkhart.

With respect to claim 13, Jagiella as modified discloses all aspects of the claims except for determining a clamping force of the support structure based on the difference in capacitance between the support structure with and without an object present.

As previously noted, Barnes discloses determining a difference in capacitance measurement between the support structure with and without an object present (Claim 1) but does not disclose determining a clamping force.

Burkhart discloses using a gap capacitance to determine a pre-determined chucking force needed to hold the wafer (Column 2, lines 35-38).

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Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jagiella to include the different in capacitance as taught by Barnes for the purpose of determining the presence of a workpiece, and further obvious to modify Jagiella to include the determination of force as taught by Burkhart for the purpose of determining a chucking voltage need to obtain a pre-determined chucking force (Columns 2, lines 36-38).

With respect to claim 12, Jagiella as modified does not disclose moving the structure after comparing the clamping force to predetermined minimum clamping force. Similar to claims 8 and 9, as the chucking force necessary to hold the wafer in place is already determined, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jagiella to include comparing the force to a predetermined minimum clamping force to hold the structure in place while moving for the purpose of finding the limits of stress parameters which could cause harmful effects to the wafer.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Zhu whose telephone number is (571) 272-5920. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (571) 272-2168. The fax phone


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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Zhu
Examiner
Art Unit 2858

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